

FOR RESIDENT'S EDITION

Vulvar hematoma secondary to spontaneous rupture of the internal iliac artery: clinical review

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Vulvar hematomas are rare, with an incidence in the obstetric population from 1:300 to 1:1500 deliveries.¹ They may also be the result of saddle injury, assault, or sexual trauma where the soft tissue of the vulva, with its rich vascular supply, is crushed against the osseous plane of the pelvis.² Puerperal hematomas will occur mostly in the presence of episiotomy or laceration, but can also occur from spontaneous injury to a blood vessel.

The presentation can be rapid after injury, or delayed secondary to pressure necrosis and subsequent vessel rupture. When arterial, the origin is usually from injury to one of the branches of the pudendal artery rather than the artery itself, including the posterior labial, transverse perineal, or posterior rectal branches.^{1,3} The bleeding can be venous in origin and is often from multiple sites.⁴

We present a case of spontaneous rupture of the internal iliac artery with an unusual presentation as a vulvar hematoma. To our knowledge this is the first such case to be described in the literature.

CASE REPORT

A 28-year-old woman presented with sudden-onset swelling and pain in her left labial region. Significant history was

Vulvar hematomas occur rarely outside the obstetric population but may present after other trauma to the pelvis or perineum. Spontaneous rupture of the internal iliac artery is described mostly in the presence of an aneurysm, with atherosclerosis, connective tissue disease, infection, and trauma as causative factors. It most often presents with abdominal pain and neurologic or urologic symptoms. We present an unusual case of a spontaneous rupture of the internal iliac artery that presented as a vulvar hematoma in a nulliparous woman that was successfully treated with selective arterial embolization and surgical evacuation. The literature is reviewed and management options discussed.

Key words: arteries, hematoma, spontaneous rupture, therapeutic embolization, vulva

an incomplete spinal cord injury (L3) secondary to a motor vehicle accident 9 months earlier. Bladder emptying was by intermittent self-catheterization on sensation (around 350 mL). There was no history of sexual intercourse or trauma, particularly in relation to catheterization. However, although initially performed, catheterization became impossible as the labial swelling progressed. She was taking no antiplatelet or anticoagulant medications.

On examination, the patient was hemodynamically stable and had developed urinary retention. There was an obvious vulvar hematoma significantly distorting her anatomy (Figure). Emergency staff members were unable to catheterize her so the urology service was consulted and flexible cystoscopy confirmed no bladder or urethral injury and assisted with indwelling catheter placement; 750 mL of clear urine was drained.

Computed tomography of abdomen-pelvis with angiography revealed a large collection in the left labia with a suggested rupture of an internal iliac branch in the region of the left pudendal artery. Formal angiography confirmed this (Figure) and embolization was successful with coils. There was no evidence of aneurysm or atherosclerosis. Because of its size, the hematoma (> 500 mL) was surgically evacuated 24 hours after embolization. Further investigation dem-

onstrated no coagulopathy, connective tissue disease, or infection as a cause of the hemorrhage. The hematoma resolved and the patient was discharged 2 weeks later.

COMMENT

The pudendal artery is the terminal branch of the anterior division of the internal iliac artery. It travels inferolaterally, passing through the greater sciatic foramen and enters the ischioanal fossa through the lesser sciatic foramen. It then passes through the pudendal canal and divides into its terminal branches that supply the external genitalia and perineum. Extension of a hematoma in this area is limited by Colles fascia and the urogenital diaphragm and is, therefore, directed toward the skin.⁵

Spontaneous rupture of the internal iliac artery occurs almost exclusively at the site of an aneurysm, usually related to atherosclerosis. Rarely, infection or connective tissue disease are responsible.⁶ Injury to the internal iliac artery results in immediate bleeding or pseudoaneurysm formation in a variety of settings: pelvic fracture or penetrating injury, in-trapartum and postpartum, or intraoperatively.^{6,7} One report documented perineal hemorrhage after spontaneous pudendal artery pseudoaneurysm rupture in the setting of bowel cancer resec-

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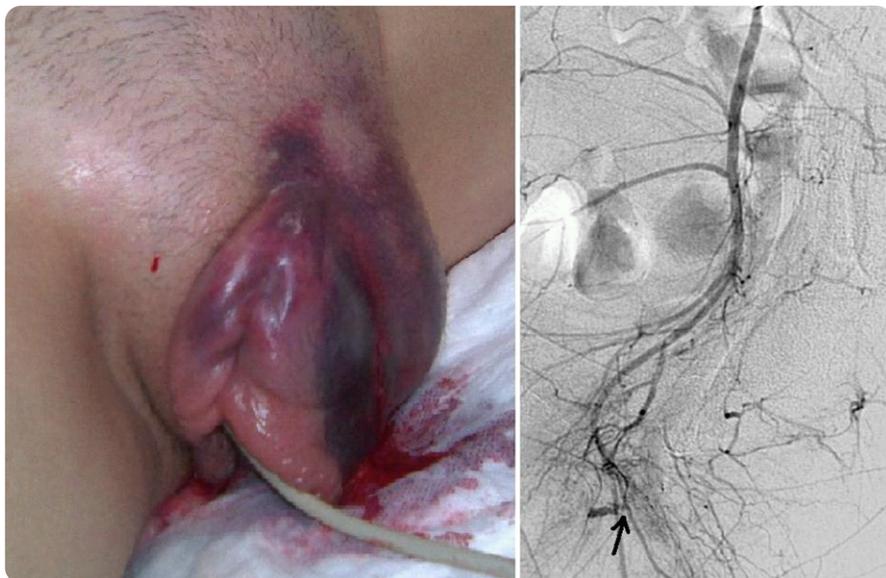
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FIGURE

Vulvar hematoma with accompanying angiography



Obvious left vulvar hematoma was significantly distorting anatomy (*left*). Computed tomographic angiography (*right*) demonstrating blush from rupture at region of pudendal artery (*arrow*), which was later coiled.

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Selective angiographic embolization is emerging as a safe and effective alternative to surgery for pelvic hemorrhage. It is well established in trauma management with increasing support in obstetric literature. However, a direct comparison in large or randomized trials has not yet been performed.⁷

Conclusion

Vulvar hematoma is an uncommon presentation that has not previously been reported as secondary to spontaneous rupture of the internal iliac artery. Although trauma is usually the most likely cause, in the absence of positive findings at cystoscopy and surgery, it must be presumed to be spontaneous. Although the artery responsible is usually a branch of the pudendal artery, a more proximal site should be considered particularly if the cause is unknown. Selective arterial embolization with or without surgery is an effective treatment option for larger or expanding hematomas.

REFERENCES

1. Zahn CM, Yeomans ER. Postpartum hemorrhage: placenta accreta, uterine inversion, and puerperal hematomas. *Clin Obstet Gynecol* 1990;33:422-31.
2. Virgili A, Bianchi A, Mollica G, Corazza M. Serious hematoma of the vulva from a bicycle accident: a case report. *J Reprod Med* 2000;45:662-4.
3. Ridgway L. Puerperal emergency: vaginal and vulvar hematomas. *Obstet Gynecol Clin North Am* 1995;22:275.
4. Propst AM, Thorp JM Jr. Traumatic vulvar hematomas: conservative versus surgical management. *South Med J* 1998;91:144-6.
5. Moore K, Dalley A. Clinically oriented anatomy. Baltimore: Lippincott Williams and Wilkins; 1999.
6. Dix FP, Titi M, Al-Khaffaf H. The isolated internal iliac artery aneurysm—a review. *Eur J Vasc Endovasc Surg* 2005;30:119-29.
7. Vedantham S, Goodwin SC, McLucas B, Mohr G. Uterine artery embolization: an under-used method of controlling pelvic hemorrhage. *Am J Obstet Gynecol* 1997;176:938-48.
8. Mann D, Satin R, Gordon PH. Neurologic sequelae following transcatheter embolization to control massive perineal hemorrhage. *Dis Colon Rectum* 1984;27:190-2.
9. Guerriero S, Ajossa S, Bargellini R, Amucano G, Marongiu D, Melis GB. Puerperal vulvovaginal hematoma: sonographic findings with MRI correlation. *J Clin Ultrasound* 2004;32:415-8.
10. Burchell RC. Internal iliac artery ligation. *Lancet* 1964;84:97-9.

tion, local radiotherapy, and abscess formation.⁸ In our case spinal cord injury with intermittent self-catheterization made trauma the most likely cause of rupture. However, with no supporting history or positive findings after extensive investigation we must conclude that the cause was spontaneous.

Presenting symptoms of internal iliac rupture are varied and depend on the site and extent of hemorrhage. They include abdominal, groin, and buttock pain, along with neurologic and urologic symptoms. The patient may also be hemodynamically unstable. Rupture into the bladder, ureter, rectum, and rectus sheath were reported,⁶ but not vulvar hematoma.

The management of a vulvar hematoma is somewhat controversial. The patient must first be adequately resuscitated.³ The hematoma itself may be managed conservatively, surgically, or with selective arterial embolization. Small hematomas can be managed expectantly but exact criteria for when a hematoma will benefit from surgery

have not been established. It is generally agreed that if it is significantly large or expanding, intervention is required.^{1,3,4}

Surgery involves incision and evacuation of hematoma with ligation of any bleeding points. As the source of bleeding is often venous, ligation is not always possible. However, evacuation of the clot is important in the prevention of pressure necrosis and infection.^{1,3}

Ultrasound, computed tomography, or magnetic resonance imaging may be appropriate to further investigate the size, site, and expansion of the hematoma.⁹ Surgical intervention has long been used for treatment of pelvic hemorrhage in numerous settings.⁷ As identification of the injured vessel is difficult, ligation of the internal iliac can be performed with resulting hemostasis achieved by reduction in pulse pressure distal to the site of ligation.¹⁰ The success rate varies between studies and cause of hemorrhage⁷ and we would recommend it only in the presence of other indications for laparotomy or failure of previous interventions.